What is claimed:

1. A stator for use in a permanent magnet machine, the stator comprising:

a frame having an outer peripheral edge and an inner peripheral edge extending about a central axis;

a plurality of stator teeth each extending along a radial axis from the frame's inner peripheral edge toward the central axis; and

at least one permanent magnet located at least partly within one of the stator teeth;

wherein said one permanent magnet has a pole surface oriented at an oblique angle relative to the radial axis along which said one of the stator teeth extends.

2. The stator of claim 1 wherein said one permanent magnet is located entirely within said one of the stator teeth, wherein said one permanent magnet and said one of the stator teeth each have a width extending in a direction of a rotor when the rotor is mounted for rotation about the central axis, and wherein the width of said one permanent magnet is greater than the width of said one of the stator teeth.

3. The stator of claim 1 wherein said one permanent magnet is located at least partly within the frame.

4. The stator of claim 1 wherein the frame includes a notch extending therein adjacent to said one of the stator teeth, and wherein a surface of the notch is contiguous to a surface of said one of the stator teeth.

5. The stator of claim 4 wherein said one of the stator teeth includes a short circuit region located between the notch and one end of said one permanent magnet.

6. The stator of claim 1 wherein the stator comprises a plurality of permanent magnets, wherein only every other one of the stator teeth has one of the permanent magnets

located at least partly therein, and wherein each permanent magnet is oriented at an oblique angle relative to the radial axis along which its corresponding one of the stator teeth extends.

7. The stator of claim 6 wherein each of the stator teeth having one of the permanent magnets located at least partly therein has a first profile, and wherein each of the stator teeth having no permanent magnets located at least partly therein has a second profile different than the first profile.

8. The stator of claim 7 wherein the first and second profiles each include end regions facing the central axis, and wherein the second profile's end regions taper inwardly towards said inner peripheral edge to a greater extent than the first profile's end regions.

9. A permanent magnet machine comprising the stator of claim 1.

10. The permanent magnet machine of claim 9 further comprising a rotor having no magnetizing coils located thereon.

11. A stator for use in a permanent magnet machine, the stator comprising:

a frame having an outer peripheral edge and an inner peripheral edge extending about a central axis;

a plurality of permanent magnets each having inwardly facing north poles;

a first plurality of stator teeth each extending along a radial axis from the frame's inner peripheral edge toward the central axis, each of the first plurality of stator teeth having one of the permanent magnets located at least partly therein; and

a second plurality of stator teeth extending from the frame's inner peripheral edge toward the central axis, the

second plurality of stator teeth each having no permanent magnets located therein;

wherein the first plurality of stator teeth are each positioned directly between two of the second plurality of stator teeth;

wherein the north poles of the permanent magnets are each oriented at an oblique angle relative to the radial axis along which its corresponding one of the stator teeth extends;

wherein each permanent magnet and its corresponding one of the stator teeth have a width extending in a direction of rotation of a rotor when the rotor is mounted for rotation about the central axis; and

wherein the width of each permanent magnet is greater than the width of its corresponding one of the stator teeth.

12. The stator of claim 11 wherein the first plurality of stator teeth each has a first profile, wherein the second plurality of stator teeth each has a second profile different than the first profile, wherein the first and second profiles each include end regions facing the central axis, and wherein the second profile's end regions taper inwardly towards said inner peripheral edge to a greater extent than the first profile's end regions.

13. The stator of claim 11 wherein each of the first plurality of stator teeth has one of the permanent magnets located entirely therein.

14. A permanent magnet machine comprising the stator of claim 11 and a rotor mounted for rotation about the central axis, the rotor including a plurality of rotor teeth extending outwardly from the central axis.

15. The permanent magnet machine of claim 14 wherein the stator includes twelve stator teeth and the rotor includes eight rotor teeth.

16. A method of magnetizing a stator of an electric machine using a magnetizing device, the stator including a plurality of stator teeth spaced about a central axis, and a plurality of magnets, the magnetizing device including a post and a coil extending around a central axis, the method comprising:

positioning the stator relative to the magnetizing device with the central axis of the stator generally parallel to the central axis of the coil and with the post extending adjacent the plurality of stator teeth; and

energizing the coil to induce flux through the post, through at least some of the stator teeth, and through at least some of the magnets to thereby magnetize at least some of the magnets.

17. The method of claim 15 wherein energizing includes energizing the coil to induce flux through the post and through the plurality of magnets to thereby magnetize the plurality of magnets with a common polarity.

18. The method of claim 15 wherein the magnetizing device includes a peripheral wall, wherein positioning includes positioning the stator relative to the magnetizing device with the peripheral wall extending around the plurality of stator teeth, and wherein energizing includes energizing the coil to induce flux through the post, through the plurality of stator teeth, through the plurality of magnets and through the peripheral wall.

19. The method of claim 16 wherein the magnetizing device includes support surfaces for supporting the stator with the central axis of the stator generally parallel to the central axis of the coil and with the post extending adjacent the plurality of stator teeth.